



### **IN THE SPECIFICATION**

Please amend the specification as follows:

**The paragraph beginning at page 13, line 1 is amended as follows:**

Figure 5F shows the structure during an implantation of a dose of ions into a portion of the cathode tip 501. In one embodiment, the implantation is a shallow implantation using low energy. In another embodiment, the ions are implanted at about 50 to 100 Angstroms from the surface of the portion of the cathode tip 501. In another embodiment, the dose of ions is a high dose that includes 1017 per square centimeter of ions. In another embodiment, the ion is one species of atomic oxygen, such as O-. In another embodiment, the ion forms an oxide compound with the material of the cathode tip; in this embodiment, the ion includes O<sup>2-</sup> ions. In another embodiment, the ion forms a superoxide compound with the material of the cathode tip; in this embodiment, the ion includes O<sup>-2</sup> ions. In one embodiment, the implantation layer [[418]] that is formed is a silicon oxide layer; it is understood that the relative dielectric constant of the silicon oxide layer is approximately 4 whereas the relative dielectric constant of silicon is about 12. In yet another embodiment, the ion is one species of atomic nitrogen. In a further embodiment, the ion is an ionic nitride. It is understood that a compound of silicon nitride has a relative dielectric constant of approximately 7.5 whereas the relative dielectric constant of silicon is about 12.

**The paragraph beginning at page 14 , line 9 is amended as follows:**

Figure 6B shows the structure during the process of implantation of at least a portion of the cathode tip 601 with a layer 605 of low relative dielectric constant material. In one embodiment, a uniform-step-coverage technique is used to apply [[a]] layer 605 of the low relative dielectric constant material with uniform thickness. In one embodiment, [[the]] layer 605 of low relative dielectric constant has a value less than about the relative dielectric constant of the material of the cathode tip 601. In another embodiment, [[the]] layer 605 of low relative dielectric constant has a value less than about 50 percent of the relative dielectric constant of the material of the cathode tip 601. In another embodiment, [[the]] layer 605 of low relative dielectric constant has a value less than about 5. In yet another embodiment, [[the]] layer 605 of low relative dielectric constant has a value less than about 12.